

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



---

ARS  
Science  
Hall of Fame

December 5, 2012



Agricultural Research Service  
U.S. Department of Agriculture

---

---

A special website is available that features photographs and biographies of all ARS Science Hall of Fame inductees since the inaugural year of 1986. Special features include browse and search functions and video clips from interviews with some members of the Hall of Fame.

Please visit [www.ars.usda.gov/careers/hof/](http://www.ars.usda.gov/careers/hof/)

---

# Agricultural Research Service

## SCIENCE HALL OF FAME

The ARS Science Hall of Fame was inaugurated in 1986. We determined that each succeeding year, one or more present or former scientists with the Agricultural Research Service could be selected, subject to the following criteria:

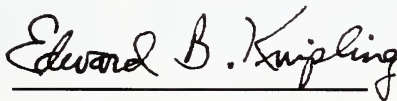
The selectee made widely recognized impact on agricultural research by the solution of a significant agricultural problem through research.

The selectee is a person whose scientific accomplishments and stature continue to affect the agricultural research community and/or influence the development of science-based agricultural policy.

The selectee's character and record of achievement have brought major recognition and credibility to ARS and/or USDA, and are worthy of emulation by younger agricultural scientists.

The selectee's achievements must be or have been nationally and/or internationally recognized by peers in the scientific community.

Today we honor three outstanding scientists by inducting them into the Science Hall of Fame. A plaque citing the achievements of each will be added to the permanent exhibit in the George Washington Carver Center, Beltsville, Maryland.

A handwritten signature in black ink that reads "Edward B. Knipling". The signature is written in a cursive style with a horizontal line underneath the name.

Edward B. Knipling  
Administrator



---

2 0 1 2

---

SCIENCE HALL OF FAME

**Larry V. Cundiff**

Research Geneticist (Retired)  
U.S. Meat Animal Research Center  
Clay Center, Nebraska

*For extraordinary research and outreach contributions having worldwide impact on genetic improvement programs, choice of breeds, and use of crossbreeding systems for beef production.*

Larry V. Cundiff is a world-renowned expert on beef genetics and breeding research. For more than 40 years, he directed genetics and breeding research that led to dramatic changes in breeding systems and genetic improvement programs in beef production worldwide.

From 1967 to 1977, Cundiff led a comprehensive project to evaluate effects of heterosis in crosses of Hereford, Angus, and Shorthorn cattle. He also was a key member of a team that conducted research to determine the feasibility of developing composite populations of beef cattle as a practical alternative to more complex crossbreeding systems. Results from these two projects had a major influence on the beef cattle industry and the increased use of crossbreeding to exploit heterosis effects.

From 1975 until his retirement, Cundiff led a multidisciplinary research team that characterized 37 diverse breeds of cattle in the comprehensive Germplasm Evaluation Program at the U.S. Meat Animal Research Center (USMARC). His team was first to show that genetic variation among breeds was comparable to that within breeds for most bioeconomic traits, but that no single breed excelled in all important traits. The results have had a major impact on breeding decisions by commercial beef producers.

Cundiff's numerous honors include ARS Outstanding Scientist of the Year (1991), American Society of Animal Science's Fellow Award (1998), USDA Superior Service Award (1999), American Hereford Association's Hall of Merit Award (2008), National Pedigreed Livestock Council's Distinguished Service Award (2010), and American Society of Animal Science's Morrison Award (2011).

He continues to be active in research after retiring, serving part time as a collaborator at USMARC and as an adjunct professor in the University of Nebraska, Department of Animal Science.







---

2 0 1 2

---

SCIENCE HALL OF FAME

**Donald P. Knowles**  
Research Leader  
Animal Disease Research Unit  
Pullman, Washington

*For innovative scientific leadership and research to solve serious problems  
in infectious animal diseases, creation of sustained partnerships,  
and training of future agricultural scientists.*

Donald Knowles is an international expert on animal disease research, and his scientific leadership has had a tremendous impact on animal health.

Through his scientific leadership in research and professional leadership in outreach within the global veterinary and agricultural communities, Knowles has provided research-based solutions for multiple infectious diseases confronting animal health. His efforts led to a suite of research solutions for a number of important animal diseases including bovine and equine babesiosis, viral diseases in small ruminants (goats and sheep) caused by lentiviruses, prion diseases, bovine anaplasmosis, and the emerging viral disease malignant catarrhal fever. Multiple new diagnostic tests developed by Knowles are being licensed and used worldwide, generating royalties that support ARS' technology transfer efforts.

Knowles has mentored numerous veterinary and graduate students over the years, and through his mentoring efforts, he is contributing to the next generation of animal health researchers critical to the provision of national and global food security. Many of the scientists he mentored are now important contributors to the field of animal health.

Knowles has made significant contributions in building an internationally recognized research partnership with multiple government and land grant university laboratories. His reputation as an expert on several animal diseases brings recognition not only to his achievements but also to ARS.

Among his numerous honors are the USDA Secretary's Honor Award (2012 and 1998), 2010 USDA Unsung Hero Award, 2001 Distinguished Senior Research Scientist, Fellow of the American Association for the Advancement of Science (AAAS) (2010), Federal Laboratory Consortium Award for Technology Transfer (2000), American Sheep Industry's Camptender Award (2011), and Pfizer Award for Research Excellence (1998).



---

2 0 1 2

---

SCIENCE HALL OF FAME

**Kenneth P. Vogel**

Supervisory Research Geneticist/Research Leader  
Grain, Forage and Bioenergy Research Unit  
Lincoln, Nebraska

*For contributions to science, perennial grass breeding and genetics,  
and grassland and bioenergy production systems.*

Kenneth P. Vogel is widely considered the foremost switchgrass expert in the world and has been heavily sought out as advisor and consultant by both government and industry on many aspects of biomass energy.

His research has been focused on all aspects of developing perennial grasses such as switchgrass into biomass energy crops and on development of improved grasses for use in livestock production systems.

As a result of Vogel's innovative and strategic research, a previously obscure prairie grass, switchgrass, is now being developed internationally into a bioenergy crop. His comprehensive baseline research information on the net energy, economics, and carbon sequestration of switchgrass grown for biomass energy—as well as on the effects of removing corn stover for biomass energy on long-term agricultural sustainability—has had a significant impact on the national strategic bioenergy plans of the United States. And because of this research, over \$1 billion has been allocated to biomass energy research since 2006 by government and industry.

Vogel facilitates cooperative research on bioenergy among ARS scientists at 13 different locations and additional cooperative research with the U.S. Department of Energy and university scientists. He is the Coordinator of the USDA Regional Biomass Research Center, Central-East Region.

Through his work, ARS is recognized both nationally and internationally as a major contributor to the U.S. bioenergy research effort.

Among Vogel's many honors are ARS Area Senior Research Scientist (1997), Fellow of the American Association for the Advancement of Science (AAAS) (1995), Fellow of the American Society of Agronomy (1990), Fellow of the Crop Science Society of America (1991), and the 2007 Dale Smith Distinguished Lecturer, University of Wisconsin-Madison.

# ARS SCIENCE HALL OF FAME

1986

**Edward F. Knippling**

*For pioneering research and leadership in development of the sterile insect technique, which led to the eradication of the screwworm, and of other technologies to suppress and manage insect pests.*

1987

**Howard L. Bachrach**

*For pioneering research on the molecular biology of foot-and-mouth disease that led to development of the world's first effective subunit vaccine for any disease of animals or humans through the use of gene splicing.*

**Myron K. Brakke**

*For consistent, career-long valuable contributions to the science of virology, particularly plant virology.*

**Glenn W. Burton**

*For outstanding achievements in forage and turf science, which have had extraordinary effects on the forage-based cattle industry, the turf industry, and agriculture worldwide.*

**Wilson A. Reeves**

*For outstanding research and leadership in the field of textile chemical finishing that have significantly benefited agriculture and consumers.*

**Earnest R. Sears**

*For pioneering work in wheat genetics and for discoveries on chromosomal mechanisms that established standards in animal, plant, and human genetics.*

**Orville A. Vogel**

*For development of the first useful semidwarf wheats and of innovative production systems that made the Pacific Northwest a major source of soft white wheat, inspired similar research efforts throughout the world, and sparked the Green Revolution.*

**Cecil H. Wadleigh**

*For elucidating the mechanisms through which crops respond to salinity and water stress and for inspired planning and leadership that enabled and motivated those who worked with him to expand and make use of knowledge of soils, water, and air and their interactions with plants.*

1988

**Francis E. Clark**

*For outstanding research leading to greater understanding of soil, plant, and microbial interactions and of nutrient cycling in terrestrial ecosystems.*

**Edgar E. Hartwig**

*For research in soybean breeding and genetics that has been a major factor in soybeans becoming the second most valuable U.S. crop and particularly for developing cultivars that thrive in the South.*

**Ralph E. Hodgson**

*For significant contributions to the knowledge of ruminant nutrition and for visionary leadership, both domestic and international, in the animal industries.*

**Hamish N. Munro**

*For career-long contributions to the science of nutrition, particularly on the relationship of dietary protein and iron to the health of the elderly, and for promotion of studies on aging.*

**Jose Vicent-Chandler**

*For research leading to new and greatly improved production systems for beef, milk, coffee, plantains, and rice for Puerto Rico and Caribbean countries.*

1989

**Douglas R. Dewey**

*For world leadership in genetics and taxonomy of the Triticeae tribe of grasses and for development of the cytogenetic basis for creating new grass hybrids.*

**Theodor O. Diener**

*For conceptualizing and discovering viroids, for leading research on viroid detection and control, and for inspiring new approaches in the search for causes of several serious diseases affecting plants, livestock, and humans.*

**Karl H. Norris**

*For developing principles and instruments using the electromagnetic wave spectrum to make rapid nondestructive measurements for evaluating quality of agricultural products.*

**John F. Sullivan**

*For engineering contributions to the food-processing and preservation industries, including development of instant potato flakes and of batch and continuous-explosion puffing.*



1990

**Theodore C. Byerly**

*For extraordinary contributions as a scientist, research leader, and administrator to the success of agricultural research programs and advances in U.S. and world agriculture.*

**Gordon Dickerson**

*For research contributions widely used by breeders to increase production efficiency of cattle, sheep, swine, and poultry.*

**Robert W. Holley**

*For isolation and characterization, including the first nucleotide sequence, of transfer ribonucleic acid (tRNA).*

**Virgil A. Johnson**

*For outstanding contributions to development of superior bread wheat cultivars and of improved wheat germplasm and for vigorous promotion of national and international cooperation among wheat breeders.*

**George F. Sprague**

*For outstanding contributions to effective methods of hybrid corn breeding and germplasm improvement.*

1991

**John H. Weinberger**

*For outstanding lifelong contributions in development of fruit varieties and fruit-breeding technology.*

**Walter H. Wischmeier**

*For developing the Universal Soil Loss Equation, which has been widely used for three decades worldwide in conservation and management of our natural resources.*

1992

**Raymond C. Bushland**

*For pioneering research leading to screwworm eradication by the sterile insect technique and for research leading to control of typhus vectors.*

**Lyman B. Crittenden**

*For significant contributions to retroviral genetics, transgenic animal development, and genome mapping in poultry.*

**Arnel R. Hallauer**

*For increasing understanding and use of quantitative genetics in plant breeding, which has led to development of many superior corn hybrids worldwide.*

1993

**John R. Gorham**

*For scientific leadership and studies that have resulted in solutions of disease control problems and have advanced the basic knowledge of viral and genetic diseases in humans and animals.*

**Sterling B. Hendricks**

*For significant contributions as a chemist, physicist, mathematician, plant physiologist, geologist, and mineralogist.*

**Clair E. Terrill**

*For scientific contributions and worldwide leadership in sheep production research.*

1994

**Charles N. Bollich**

*In recognition of superlative accomplishments in rice breeding and genetics and their consequent benefits to American agriculture.*

**Chester G. McWhorter**

*For outstanding contributions to American agriculture through basic and applied research that has resulted in improved weed-management technology, increased yields, and reduced cost of production.*

**Malcolm J. Thompson**

*For career research contributions in the field of insect and plant steroid biochemistry.*

1995

**Harry Alfred Borthwick**

*In recognition of contributions in elucidating the importance of photoperiodic mechanisms controlling flowering in plants.*

**William M. Doane**

*For initiating, leading, and conducting research that created new and useful products and led to the establishment of new industries based on agricultural raw materials.*

**Walter Mertz, M.D.**

*For contributions and leadership in elucidating the importance to health of several trace elements and promoting research on dietary risk factors for chronic disorders.*



1996

**Fred W. Blaisdell**

*For pioneering research and development of improved structures  
for soil and water conservation.*

**Herbert J. Dutton**

*For pioneering research leading to the establishment of soybean oil  
as the predominant edible vegetable oil in the world.*

**Charles Jackson Hearn**

*For developing improved orange, grapefruit, and tangerine varieties used  
extensively by U.S. citrus producers to replace trees killed by the  
1980 freezes and to expand the citrus acreage.*

1997

**Morton Beroza**

*For major contributions to the development of environmentally compatible  
insect control strategies through discovery of lures,  
attractants, repellents, and pheromones.*

**R. James Cook**

*For extraordinary research on sustainable approaches to improve wheat health  
and for leadership in the transfer of information and technology  
resulting in solutions to agricultural problems.*

**William L. Ogren**

*For outstanding leadership and fundamental contributions to photosynthetic  
carbon metabolism leading to the discovery of new opportunities to improve  
the efficiency and productivity of crop plants.*

1998

**Thomas J. Henneberry**

*For conducting basic and applied individual and team research that has had  
sustained global impact on development and implementation  
of integrated pest management systems.*

**James H. Tumlinson III**

*For research that led to eradication of the boll weevil from the southeastern  
United States and the discovery of the chemical basis of  
plant-insect-parasite interaction.*

1999

**Allene R. Jeanes**

*For microbiological, chemical, and engineering research that created urgently  
needed, life-saving industrial polymers made from agricultural commodities.*

**Charles W. Stuber**

*For pioneering the use of molecular markers in identifying, mapping, and manipulating quantitative trait genes.*

**Richard L. Witter**

*For outstanding research contributions and leadership in the field of avian tumor viruses.*

**2000**

**Virginia H. Holsinger**

*For research leading to increased use of milk products and for humanitarian efforts in developing nutritious formulations for international food donation programs.*

**Marvin E. Jensen**

*For advancements in irrigation scheduling using computer models to estimate soil-water balance and for advancements in evapotranspiration theory.*

**Harley W. Moon**

*For contributions to a fundamental understanding of intestinal diseases in livestock and for development of effective control programs for these diseases.*

**2001**

**Lawrence A. Johnson**

*For pioneering research in developing the first useful technology for gender preselection of animal and human offspring and for outstanding contributions to semen preservation and artificial insemination in swine.*

**William E. Larson**

*In recognition of a pioneer who respected soil as a natural resource and devoted a research career toward improving its quality.*

**William L. Mengeling**

*For outstanding research contributions and leadership in the field of viral diseases of swine.*

**2002**

**George Inglett**

*In recognition of the development of novel, patented food ingredients including Oatrim and Nutrinu, which have had a sustained beneficial effect on the American diet.*

**K. Darwin Murrell**

*For landmark research on parasites of veterinary and medical importance, especially trichinellosis of swine, and innovative development and leadership of laboratory and agency-level programs that established and advanced objectives of the Agricultural Research Service.*

**Stuart O. Nelson**

*For pioneering research on the dielectric properties of agricultural materials, applications of radio-frequency and microwave energy, and electrical measurements for moisture sensing in cereal grains.*

**2003**

**Edward B. Bagley**

*For outstanding research in rheology and food science that generated fundamental understanding of flow mechanics; and for pioneering concepts in super-absorbent materials that resulted in one of the most successful technology transfers in USDA history.*

**Janice M. Miller**

*For pioneering research in understanding, diagnosing, and controlling bovine leukemia, transmissible spongiform encephalopathies, and other chronic infectious or zoonotic diseases of ruminants.*

**2004**

**Donald K. Barnes**

*For remarkable contributions to alfalfa breeding and genetics, mentoring of plant breeding students, and service to ARS and the scientific community.*

**Ruth Rogan Benerito**

*For applying physical chemistry to solve problems that led to improved procedures and new uses for renewable resources such as cotton, wood, and paper.*

**Keith E. Gregory**

*For outstanding research contributions in genetics and breeding of beef cattle and for leadership of ARS research programs.*

**2005**

**Charles W. Beard**

*For outstanding contributions in poultry health research, in professional and organizational leadership, and in developing biocontainment concepts and systems for animal agriculture.*

**Nelson A. Cox**

*For lifetime contributions of distinctive research benefitting the poultry industry and public health through development and transfer of technologies that reduced foodborne pathogens, particularly Salmonella and Campylobacter.*

**Sigmund Schwimmer**

*For a distinguished career of scientific excellence in enzymology and its application to food science and human food products and quality.*

**Tien C. Tso**

*For outstanding research contributions and leadership in plant physiology and phytochemistry and their use to advance plant science.*

**2006**

**Wayne W. Hanna**

*For significant scientific contributions to U.S. food production and the national recreation industries and for related scientific achievements for research on apomixis and interspecific germplasm transfer.*

**Ray D. Jackson**

*For elucidating the basis of soil-plant-water-atmosphere relationships and developing innovative methods to assess and manage crop status through remote sensing.*

**Vernon G. Pursel**

*For lifetime contributions to genetic and reproductive development of livestock through pioneering research in genetic engineering and semen preservation.*

**2007**

**Johnie N. Jenkins**

*For pioneering leadership, vision, innovative cotton host plant resistance research and technologies, impact on science, and development and mentoring of young scientists.*

**Dennis Gonsalves**

*For pioneering research and leadership in plant pathology and biotechnology to increase agricultural productivity and improve human health.*

**Janet C. King**

*For national and international leadership and research achievement in human nutrition.*

2008

**Robert E. Davis**

*For meritorious and exemplary contributions to the science of plant pathology  
and for a dedicated career of service to the Agricultural Research Service.*

**Andrew N. Sharpley**

*For pioneering nutrient research leading to the development of agricultural  
management practices and strategies that are used nationally and  
internationally to protect water quality.*

2009

**Max J. Paape**

*In recognition of exceptional research and leadership that enhanced animal  
and human health through advances in the identification, control,  
and prevention of bovine mastitis.*

**J. Neil Rutger**

*For demonstrating the usefulness of induction, evaluation,  
and integration of mutants in rice genetics and breeding.*

**B.A. Stewart**

*For exceptional research on soil and crop management practices and  
outstanding leadership of local, national, and international research programs  
to sustain our natural resources.*

2010

**Jitender P. Dubey**

*For pioneering research in identifying and aiding in the control  
of protozoan diseases in livestock and humans.*

**Ronald L. Horst**

*For research on calcium and vitamin D metabolism  
resulting in strategies to prevent milk fever in dairy cows  
and for insight into bone disease.*

**L. Dale Van Vleck**

*For extraordinary contributions in expanding quantitative genetic and  
statistical theory and in developing computational procedures that had an  
impact in genetic improvement programs for livestock worldwide.*

2011

**Allen R. Dedrick**

*For national and international impact and leadership in the development and application of technology for efficient use of scarce water resources worldwide.*

**Ronald Fayer**

*For scientific leadership of research on parasites of veterinary and medical importance especially protist pathogens affecting food animals and food safety and for leadership of laboratory and agency programs that promoted the objectives of the Agricultural Research Service.*

**Ronald F. Follett**

*For outstanding research contributions in the enhancement of soil, water, and air quality.*

---

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

NATIONAL AGRICULTURAL LIBRARY



1023125445